Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Claim 1 (Cancelled).

Claims 2-42 (Previously cancelled).

43. (New) A method of detecting a neurological disorder in a patient, the method comprising:

(a) obtaining DNA from the patient;

(b) creating a mixture by contacting the DNA with a polynucleotide having a nucleotide sequence that is either identical or complementary to a nucleotide sequence which is adjacent to an exon of SEQ ID NO:1 under conditions which promote specific hybridization between the polynucleotide and the DNA; and

(c) detecting whether hybridization between the polynucleotide and the DNA has occurred.

44. (New) The method of claim 43, wherein the neurological disorder is Parkinsonism.

45. (New) The method of claim 44, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

46. (New) The method of claim 43, wherein a polymerase chain reaction is used on the mixture of (b) to amplify a portion of the DNA and determining if the portion of the DNA is amplified.

47. (New) The method of claim 46, wherein the neurological disorder is Parkinsonism.

48. (New) The method of claim 47, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

49. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 1.

50. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 2.

51. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 3.

52. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 4.

53. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 5.

54. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 6.

55. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 7.

56. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 8.

57. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 9.

58. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 10.

59. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 11.

60. (New) The method of claim 43, wherein the adjacent sequence is adjacent to exon 12.

61. (New) The method of claim 43, wherein the polynucleotide in (b) is between 10 to 25 nucleotides in length.

62. (New) A method of detecting a neurological disorder in a patient, the method comprising:

(a) obtaining DNA from the patient;

(b) creating a mixture under conditions which promote specific hybridization by contacting the DNA with a polynucleotide having a nucleotide sequence selected from the group consisting of:

i. SEQ ID NO:31;

ii. SEQ ID NO:32;

iii. SEQ ID NO:33;

iv. SEQ ID NO:34;

v. SEQ ID NO:35;

vi. SEQ ID NO:36;

vii. SEQ ID NO:37;

viii. SEQ ID NO:38;

ix. SEQ ID NO:39;

x. SEQ ID NO:40;

xi. SEQ ID NO:41;

xii. SEQ ID NO:42;

xiii. SEQ ID NO:43;

xiv. SEQ ID NO:44;

xv. SEQ ID NO:45;

xvi. SEQ ID NO:46;

xvii. SEQ ID NO:47;

xviii. SEQ ID NO:48;

xix. SEQ ID NO:49;

xx. SEQ ID NO:50;

xxi. SEQ ID NO:51;

xxii. SEQ ID NO:52;

xxiii. SEQ ID NO:53;

xxiv. SEQ ID NO:54;

xxv. SEQ ID NO:55;

xxvi. SEQ ID NO:56;

xxvii. SEQ ID NO:57;

xxviii. SEQ ID NO:58;

xxix. SEQ ID NO:59;

xxx. nucleotides 351-371 of SEQ ID NO:1;

xxxi. SEQ ID NO:70; and

xxxii. a nucleotide sequence complementary to any one of the nucleotide sequences of (i), (ii), (iii), (iv), (v), (vi), (vii), (viii), (ix), (x), (xi), (xii), (xiii), (xiv), (xv), (xvi), (xvii), (xviii), (xix), (xx), (xxi), (xxii), (xxiii), (xxiv), (xxv), (xxvi), (xxvii), (xxviii), (xxix), (xxx), and (xxxi); and

(c) detecting whether hybridization between the polynucleotide and the DNA has occurred.

63. (New) The method of claim 62, wherein the neurological disorder is Parkinsonism.

64. (New) The method of claim 63, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

65. (New) The method of claim 62, wherein a polymerase chain reaction is used on the mixture of (b) to amplify a portion of the DNA and determining if the portion of the DNA is amplified.

66. (New) The method of claim 65, wherein the neurological disorder is Parkinsonism.

67. (New) The method of claim 66, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

68. (New) A method of detecting a neurological disorder in a patient, the method comprising:

(a) obtaining DNA from the patient;

(b) creating a mixture by contacting the DNA with a polynucleotide having a nucleotide sequence that is either identical or complementary to a nucleotide sequence which is adjacent to an exon of SEQ ID NO:3 under conditions which promote specific hybridization between the polynucleotide and the DNA; and

(c) detecting whether hybridization between the polynucleotide and the DNA has occurred.

69. (New) The method of claim 68, wherein a polymerase chain reaction is used on the mixture of (b) to amplify a portion of the DNA and determining if the portion of the DNA is amplified.

70. (New) A method of determining a predisposition for a neurological disorder in a human subject, the method comprising:

(a) obtaining a nucleic acid sample from the human subject;

(b) assaying the nucleic acid sample to determine the presence or absence of a Parkin gene mutation associated with the neurological disorder, wherein the Parkin

gene mutation is a partial or complete deletion of at least one of exons 3, 4, 5, 6 and 7 of SEQ ID NO:1, and

wherein the presence of the Parkin gene mutation indicates that the human subject has a predisposition for the neurological disorder.

71. (New) The method of claim 70, wherein the neurological disorder is Parkinsonism.

72. (New) The method of claim 71, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

73. (New) The method of claim 70, wherein the assaying in (b) comprises contacting the nucleic acid with a polynucleotide hybridizable with the nucleic acid and carrying out a polymerase chain reaction.

74. (New) A method of determining a predisposition for a neurological disorder in a human subject, the method comprising:

(a) obtaining a nucleic acid sample from the human subject;

(b) assaying the nucleic acid sample to determine the presence or absence of a Parkin gene mutation associated with the neurological disorder, wherein the Parkin gene mutation is a partial or complete deletion of at least one of exons 3, 4, 6 and 7 of SEQ ID NO:3, and

wherein the presence of the Parkin gene mutation indicates that the human subject has a predisposition for the neurological disorder.

75. (New) The method of claim 74, wherein the neurological disorder is Parkinsonism.

76. (New) The method of claim 75, wherein the neurological disorder is autosomal recessive juvenile Parkinsonism.

77. (New) The method of claim 74, wherein the assaying in (b) comprises contacting the nucleic acid with a polynucleotide hybridizable with the nucleic acid and carrying out a polymerase chain reaction.

78. (New) A method of determining a predisposition of a human subject for Parkinson's disease, the method comprising:

(a) obtaining a nucleic acid sample from the human subject; and

(b) determining whether a point mutation is present at position 366 of SEQ ID No:1 or SEQ ID NO:3,

wherein the presence of a point mutation at position 366 of SEQ ID NO:1 or SEQ ID NO:3 indicates a predisposition for Parkinson's disease.

79. (New) The method of claim 78, wherein the point mutation is an Arg to Trp mutation.